

Listing and Amendments to the Claims

This listing of claims will replace the claims that were published in the PCT Application:

1. (currently amended) A method for supporting an interworking between a ~~W~~ireless ~~L~~ocal ~~A~~rea ~~N~~etwork (WLAN) and a mobile communications system, the mobile communications system having a first ~~S~~upport ~~N~~ode for interfacing a radio access network to a core network and a second ~~S~~upport ~~N~~ode for interfacing the mobile communications system to a second communications system, the method comprising the steps of:

providing an interworking function (IWF) associated with the WLAN and coupled to the mobile communications system;

establishing at least one ~~T~~unneling ~~P~~rotocol – ~~U~~ser plane tunnel between the IWF and the second ~~S~~upport ~~N~~ode for transferring data signals; and

establishing at least one ~~T~~unneling ~~P~~rotocol – ~~C~~ontrol plane tunnel between the first ~~S~~upport ~~N~~ode and the second ~~S~~upport ~~N~~ode for transferring control signals.

2. (currently amended) The method of claim 1, wherein the mobile communications network comprises a UMTS network, the first ~~S~~upport ~~N~~ode comprises a ~~S~~erving ~~G~~eneral ~~P~~acket ~~R~~adio ~~S~~ervice (GPRS) ~~S~~upport ~~N~~ode (SGSN), the second ~~S~~upport ~~N~~ode comprises a ~~G~~ateway GPRS ~~S~~upport ~~N~~ode (GGSN), the ~~T~~unneling ~~P~~rotocol – ~~U~~ser plane tunnel comprises a GPRS ~~T~~unneling ~~P~~rotocol – ~~U~~ser ~~P~~lane (GTP-U) tunnel, and the ~~T~~unneling ~~P~~rotocol – ~~C~~ontrol ~~P~~lane tunnel comprises a GPRS ~~T~~unneling ~~P~~rotocol – ~~C~~ontrol ~~P~~lane (GTP-C) tunnel.

3. (original) The method of claim 2, wherein the IWF is configured as a logical SGSN with respect to the data signals.

4. (currently amended) The method of claim 2, wherein said step of establishing the at least one GTP-U tunnel comprises the step of defining a GTP tunnel in a GTP-U for at least one ~~P~~packet ~~D~~ata ~~P~~protocol (PDP) context in at least one of the GGSN and the IWF.

5. (currently amended) The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one ~~R~~adio ~~A~~ccess ~~B~~earer (RAB).

6. (currently amended) The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one ~~P~~packet ~~D~~ata ~~P~~protocol (PDP) context with a same PDP address and ~~A~~ccess ~~P~~oint ~~N~~ame (APN) for tunnel management messages.

7. (original) The method of claim 2, wherein a GTP-C carries GPRS mobility management functions.

8. (original) The method of claim 2, further comprising the step of providing access to both the WLAN and the mobile communications system through a single point of attachment consisting of the GGSN.

9. (currently amended) The method of claim 2, wherein the ~~C~~ore ~~N~~etwork includes, the GGSN and the SGSN, and the method further includes the step of maintaining a connection between a ~~U~~ser ~~E~~quipment (UE) and the CN while diverting data to the UE through the at least one GTP-U tunnel between the GGSN and the IWF.

10. (currently amended) The method of claim 2, wherein the mobile communications network comprises a ~~R~~radio ~~N~~etwork ~~C~~ontroller (RNC) and the IWF is disposed on a WLAN side of the interworking, and the step of establishing the at least one GTP-U tunnel couples the IWF of the WLAN to the GGSN of the mobile communications network while bypassing the RNC and the SGSN of the mobile communications network.

11. (currently amended) The method of claim 2, further comprising the steps of:

authenticating a ~~U~~ser ~~E~~quipment (UE) by the mobile communications network;

communicating a result of said authenticating step to the IWF through the GGSN.

12. (currently amended) The method of claim 2, further comprising the steps of:

registering a WLAN coverage area as a different ~~R~~outing ~~A~~rea (RA) with the mobile communications network; and

specifying an IWF address and ~~T~~unnel ~~E~~ndpoint ~~I~~dentifiers (TEIDs) for said step of establishing the at least one GTP-U tunnel, when one of a ~~P~~acket ~~D~~ata ~~P~~rotocol (PDP) request of a modify PDP request is received from a ~~U~~ser ~~E~~quipment (UE).

13. (currently amended) The method of claim 2, further comprising the steps of:

employing the GGSN as a ~~F~~oreign ~~A~~gent (FA) to handle UE mobility; and informing the SGSN to establish the at least one GTP-U tunnel.

14. (original) The method of claim 2, further comprising the step of employing encryption used by the mobile communications network for a user connecting to the WLAN.

15. (currently amended) An apparatus for supporting an interworking between a ~~W~~ireless ~~L~~ocal ~~A~~rea ~~N~~etwork (WLAN) and mobile communications network, the mobile communications network having a first ~~S~~upport ~~N~~ode for interfacing a radio access network to a core network and a second ~~S~~upport ~~N~~ode for interfacing the mobile communications system to a second communications system, the interworking being facilitated by an ~~I~~nter~~W~~orking ~~F~~unction (IWF), the apparatus comprising:

means for establishing at least one ~~T~~unneling ~~P~~rotocol – ~~U~~ser plane tunnel between the IWF and the second ~~S~~upport ~~N~~ode for transferring data signals; and

means for establishing at least one ~~T~~unneling ~~P~~rotocol – ~~C~~ontrol plane tunnel between the first ~~S~~upport ~~N~~ode and the second ~~S~~upport ~~N~~ode for transferring control signals.

16. (currently amended) The apparatus according to claim 15, wherein the first ~~S~~upport ~~N~~ode comprises ~~S~~erving ~~G~~eneral ~~P~~acket ~~R~~adio ~~S~~ervice (GPRS) ~~S~~upport ~~N~~ode (SGSN), the second ~~S~~upport ~~N~~ode comprises ~~G~~ateway GPRS ~~S~~upport ~~N~~ode (GGSN), the ~~T~~unneling ~~P~~rotocol – ~~U~~ser plane tunnel comprises a GPRS ~~T~~unneling ~~P~~rotocol – ~~U~~ser plane (GTP-U) tunnel, and the ~~T~~unneling ~~P~~rotocol – ~~C~~ontrol plane (GTP-C) tunnel.

17. (original) The apparatus of claim 16, wherein the IWF is configured as a logical SGSN with respect to the data signals.

18. (currently amended) The apparatus of claim 16, wherein said means for establishing the at least one GTP-U tunnel comprises means for defining a GTP tunnel in a GTP-U for at least one ~~P~~acket ~~D~~ata ~~P~~rotocol (PDP) context in at least one of the GGSN and the IWF.

19. (currently amended) The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in a GTP-C for at least one ~~R~~adio ~~A~~ccess ~~B~~earer ~~r~~ (RAB).

20. (currently amended) The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in a GTP-C for at least one Ppacket Ddata Pprotocol (PDP) context with a same PDP address and Aaccess Ppoint Nname (APN) for tunnel management messages.

21. (original) The apparatus of claim 16, wherein a GTP-C carries GPRS mobility management functions.

22. (original) The apparatus of claim 16, further comprising means for providing access to both the WLAN and the mobile communications network through a single point of attachment consisting of the GGSN.